



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

AUG 10 2016

CERTIFIED MAIL 7009 1680 0000 7677 7759
RETURN RECEIPT REQUESTED

REPLY TO THE ATTENTION OF:

Mr. Vik Sahni
Director of Operations
A&B Foundry
835 North Main Street
Franklin, Ohio 45005

Re: Notice of Violation
Compliance Evaluation Inspection
EPA ID: OHD987000015

Dear Mr. Sahni:

On December 17, 2015, representatives of the U.S. Environmental Protection Agency and Ohio Environmental Protection Agency inspected the A&B Foundry ("A&B") located in Franklin, Ohio. As a potential generator of hazardous waste, A&B may be subject to the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 et seq. (RCRA). The purpose of the inspection was to evaluate A&B's compliance with certain provisions of RCRA and its implementing regulations related to the generation, treatment, and storage of hazardous waste. A copy of the inspection report is enclosed for your reference.

Subsequent to the inspection, EPA issued a Request for Information (RFI) to you on March 24, 2016, to which you responded in email submittals on June 29, 2016, July 6, 2016, and July 22, 2016.

Based on information provided by A&B, on EPA's review of records pertaining to A&B, and on the inspector's observations, EPA has determined that A&B violated the RCRA record-keeping requirement related to hazardous waste determinations.

A generator must determine whether its waste is hazardous using the method prescribed under Ohio Admin. Code § 3745-52-11 [40 C.F.R. § 262.11]. Records supporting a determination made in accordance with Ohio Admin. Code § 3745-52-11 [40 C.F.R. § 262.11] must be kept for at least three years from the date the waste was last sent to on-site or off-site treatment, storage, or disposal. See, Ohio Admin. Code 3745-52-40(C) [40 C.F.R. § 262.40(c)].

At the time of the inspection, and in response to the RFI, A&B had made the determination that used foundry sands were non-hazardous. A&B did not, however, provide documentation to support this determination.

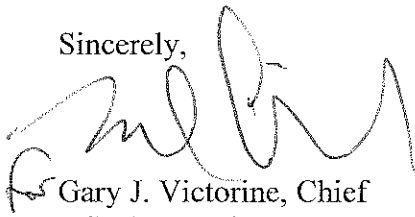
Note: EPA is requesting analytical support for this determination.

CONCLUSION

According to Section 3008(a) of RCRA, EPA may issue an order assessing a civil penalty for any past or current violation, requiring compliance immediately or within a specified time period, or both. Although this letter is not such an order or a request for information under Section 3007 of RCRA, 42 U.S.C. § 6927, we request that you submit a response in writing to us no later than 30 days after receipt of this letter documenting the actions, if any, which you have taken since the inspection to establish compliance with the waste determination violation delineated above. You should submit your response to Brenda Whitney, U.S. EPA, Region 5, 77 West Jackson Boulevard, LR-8J, Chicago, Illinois 60604.

If you have any questions regarding this letter, please contact Ms. Whitney, of my staff, at 312-353-4796 or at whitney.brenda@epa.gov.

Sincerely,



Gary J. Victorine, Chief
RCRA Branch

Enclosure

cc: Jeff Smith, OEPA – Jeffrey.smith@epa.ohio.gov
Mitch Mathews, OEPA – Mitchell.Mathews@epa.ohio.gov

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604

Compliance Evaluation Inspection Report

Date of Inspection: December 17, 2015

Facility Name: A & B Foundry and Machining

Facility Address: 835 North Main Street
Franklin, Ohio 45005

EPA RCRA ID Number: OHD987000015

Generator Status: Conditionally Exempt Small Quantity Generator

Facility Contact: Vik Sahni
Director of Operations

U.S. EPA RCRA Inspector: Brenda Whitney - Environmental Engineer
Compliance Section 2
RCRA Branch
Land and Chemicals Division

Prepared By:


Brenda Whitney - Environmental Engineer

1-14-16
Date

Approved By:


Julie Morris - Chief, Compliance Section 2

1/14/16
Date

Purpose of Inspection

I conducted an unannounced Compliance Evaluation Inspection (CEI or "Inspection") of the A&B Foundry and Machining facility ("A&B" or "Facility") located in Franklin, Ohio, on December 17, 2015. This CEI was an evaluation of A&B's compliance with the RCRA hazardous waste regulations codified in the Ohio Administrative Code and the Code of Federal Regulations. The Facility has notified as a small quantity generator of hazardous waste generating less than 1,000 kilograms of hazardous waste per month. During the inspection, employees of A&B stated that they do not generate hazardous waste except for used lamps. Jeff Smith and George Strobel of the Ohio EPA also participated in this CEI.

Participants

Jay Harrison – Plant Manager	A&B
Vik Sahni (via telephone) – Director of Operations	A&B
Jeff Smith – Environmental Specialist	OEPA
George Strobel – Supervisor, Materials and Waste Management	OEPA
Brenda Whitney – Environmental Engineer	U.S. EPA

Introduction

Messrs. Smith and Strobel and I arrived at the facility at approximately 8:30 a.m. and I displayed official credentials. We signed the visitor logbook and were introduced to Mr. Harrison, who contacted Mr. Sahni on the phone. Mr. Sahni stated that hazardous waste is not generated at this facility which is a bronze and aluminum foundry. He also stated that Mr. Harrison would be able to accompany us on a tour of the facility and answer basic questions. During an introductory briefing with Mr. Harrison, I delineated the purpose and logistics of the CEI, and explained that I would be taking photographs in the facility as needed.

Site Description

The following information about A&B is based on the personal observations of the EPA inspector and on representations made during the Inspection by the Facility personnel identified above or within the text.

A&B is a bronze and aluminum foundry that houses approximately 30 employees who work two shifts. The A&B property consists of seven total structures: An office which faces the street, the foundry, four storage buildings on the west side and a storage building on the east side. The foundry itself has three segments. The “Old Foundry,” the 1985 addition, and the 1989 addition. The original building built in approximately 1950 was destroyed by fire.

The foundry process has four basic components: creating molds, melting metal, pouring the metal, and finishing the product.

Creating Molds

All patterns and molds at this facility are created using the same methods. A customer-designed pattern, with rigging, gating, and runner systems, is constructed of wood in two complimentary halves. Silica sand is mixed with a formaldehyde-based Air-Set resin and binder catalyst that hardens without the addition of heat to hold the sand in place once it is packed into the pattern. Cores for internal components in the pattern, are made in the same fashion. For smaller jobs, olivine sand is used, which does not require the use of a chemical binder. In both cases, the pattern is removed when the sand is set leaving behind a cavity that becomes the mold. This mold is then coated with a chemical that prevents the molten metal from leaching into the sand. The matching halves of the mold are pressed together completing the form.

Preparing the Metal

A&B casts bronze and aluminum only with aluminum accounting for approximately 90% of the total work. The incoming feedstock of metal is tested in-house by spectroscopy to determine the percentage of elements that make up the alloy. If the ratios are within specification, the raw metal is charged into a melter. If not entirely within spec, A&B has a stock of materials to make up the difference. A&B utilizes both gas and electric-powered (likely coreless induction) melters. Electric-arc furnaces are not used at this facility. The electric melters have a capacity of 1000 pounds or 3200 pounds. The gas melters have a capacity of approximately 170 pounds. After melting, the impurities are skimmed from the surface of the molten metal to be sent back to the supplier. A sample of each melt is also tested for tensile strength in the spectroscopy lab.

The Pour

Molten metal is poured into the mold through the gate assembly. The metal fills the cavity in the mold and runs up through the risers to the top of the mold. In order to stabilize the rate of cooling through the large molds, an employee places "Hot Topping" on the molten metal that appears at the top of the risers. This topping is an exothermic compound which is a flammable solid powdered aluminum. The employee will pull off the burned topping and may top off the riser with an additional ladle of metal. This process may be repeated for approximately 30 minutes until cooling has stabilized after which the mold is set aside to completely cool.

Product Finishing

At the appropriate time, the cast is removed from the mold using jackhammers or sledgehammers. Gates and risers are cut off with a band saw or chop saw, depending on the cast. The only finishing done at this facility is hand grinding. The customer takes the raw product for machining and surface finishing.

Waste Generation

Wastes generated at this facility include knocked off blocks of sand, scrap metal and metal slag (dross) from the melters. The dross and scrap are collected for return to the metal supplier (Foundry Way in Milford, Ohio). The used sand is disposed of as non-hazardous waste. According to Mr. Sahni, the waste sand is certified for beneficial reuse. It was not made clear during the inspection if the sand would otherwise be a hazardous waste if not used beneficially, nor was it clear what agency or corporation certified the sand for reuse.

According to Mr. Harrison, the powdered aluminum "Hot Topping" is used up in process and not discarded unless, perhaps, it is off-specification. The same was said regarding the coating applied to the mold surface. The coating applicator brushes and spray guns are cleaned using isopropanol. The isopropanol is also not discarded as only evaporative losses are replenished with fresh solvent. According to Mr. Harrison, used oil and universal waste are not accumulated at the facility because all maintenance, including that for the propane forklifts, is outsourced.

Site Tour

The tour began in the foundry building. In the “Old Foundry” portion, I observed three gas furnaces, none of which were in operation at that time. The remainder of this portion of the building appeared to be used for storage and idle space. I checked the fire extinguishers in this area. Two of three extinguishers did not have inspection tags, and the third was tagged with an inspection date in December, 2014.

Upon entering the 1985 Building portion, I noticed a sign warning of radiation on a two story high door. Mr. Harrison stated that this was an x-ray chamber to image finished casts to look for imperfections in the pour. Mr. Harrison stated that they do not discard x-ray film or developing chemicals. We observed a pour and the application of hot topping on top of the risers (See Appendix A: Photograph 1). Next to this operation were some electric furnaces. Mr. Harrison noted that furnace 7 was out of service and furnace 6 was being rebuilt. He also stated that damaged refractory bricks in the furnaces are not discarded but are patched before the furnace is put back into service.

Between the 1985 and 1989 Buildings along the west wall is the spectroscopy lab and a fluorescent penetrant testing area. Hazardous waste was not observed in either area.

In the 1989 Building, we observed shake-out/knock-off piles of sand (See Appendix A: Photograph 2) and a hand-grinding station. One quarter of this building is occupied by a “Vacuum Process.” The patterns used in this portion of the facility are some of the largest processed in this facility. This line uses vacuum pressure to set the sand in the molds in place. Because binders are not added to this sand, it remains loose and is reused at the site. A dust collector captures sand fines that do not meet the grain size requirements for the molds. The spent fines are managed as non-hazardous waste. The compressor room and maintenance area are also in this building. Hazardous waste was not observed in either area.

The tour continued to the four out-buildings (A-D) on the west side of the property. Each building appeared to contain stored materials such as patterns and equipment. Hazardous waste was not observed in any of these structures.

The inspection proceeded to the outdoor portion of the property on the north side of the facility. The following observations were made:

- One 55-gallon poly drum was on its side and contained liquid. This drum was righted at the time of the inspection (See Appendix A: Photograph 3).
- Next to the above-mentioned drum was a small pile of pink-colored sand (perhaps 2 feet in diameter). It should be noted that the air-set binder used at this facility (Alphaset 9040) is a reddish-brown (See Appendix A: Photograph 4).
- Several containers were noted in the brush along the fence line (See Appendix A: Photographs 5 and 6).
- Twenty-two 55-gallon drums were banded together in groups of four and palletized. These containers were aligned in a row in front of Buildings C and D. These containers were not labeled, though many of them (if not all) contained material. Some of these containers were bulging (See Appendix A: Photographs 7 – 9).

- Old electronic equipment and other discarded items were abandoned on the ground outside (See Appendix A: Photograph 10).
- An employee was burning old pallets in an open fire.
- One 55-gallon poly drum located outside on the north side of the property was not labeled and contained unknown material (See Appendix A: Photograph 11).
- Several totes of Alphaset appearing to be empty were stored outside (See Appendix A: Photographs 12 and 13).
- The property was piled with pink or tan-colored knock-off sand (See Appendix A: Photographs 14 and 18).
- One 30-gallon drum outside the back door leading into the 1989 Building appeared to be filled with oil. The oil was spilling out on top of the container (See Appendix A: Photograph 15).
- Two 55-gallon drums were located near the container of oil identified above. One of these drums appeared to contain material but was not labeled (See Appendix A: Photograph 16).

The tour ended at the maintenance building located at the front of the facility at the eastern corner of the property. This building was no longer used for maintenance and was another storage area for unused equipment and patterns. One 55-gallon drum was observed in this area. The container was labeled as "Full." It was not known at the time of the inspection the contents of this container (See Appendix A: Photograph 17).

End of Tour

Records and Emergency Preparedness Review

Preparedness and Prevention: The facility is equipped with telephones, fire extinguishers, spill control equipment, and decontamination equipment. The facility is not sprinkled due to the fact that it is a foundry and molten/extremely heated metals react violently with water. Some of the extinguishers were not tagged.

Waste Determinations: According to the information gathered during the inspection, all waste determinations have been made using generator knowledge. The accuracy of the determinations will be further discussed with A&B representatives as documentation beyond MSDS forms was not available for review at the time of the inspection.

Used oil: A 30-gallon container of oil was observed outside of the 1989 Building. It was unknown at the time of the inspection where this material was generated and how it was going to be managed. The container was not labeled.

Closing Conference

During the closing conference with the Mr. Harrison, I discussed my observations noted during the inspection. I informed Mr. Harrison that I would be generating a report that included a letter, narrative discussion of the CEI and attendant photographs and checklists.

The following items were discussed with Mr. Harrison at the close of the inspection.

- I would be requesting any analytical data that they may have on file for the wastes generated at this facility;
- I would be requesting all shipping documents for wastes.
- I would be requesting information regarding the containers of unknown materials that were observed during the inspection.
- Information discussed and collected throughout the inspection was not claimed as confidential business information.

Appendices

Appendix A: Photograph Log

Appendix B: CESQG checklist

Appendix C: Documents received during the inspection.

Appendix A

Photograph Log

Inspection Date:

December 17, 2015

Facility Name and ID Number:

A & B Foundry and Machining

EPA ID: OHD987000015

Inspector and Photographer:

Brenda Whitney

Compliance Section 2

RCRA Branch

Land and Chemicals Division

Camera Used:

Olympus Stylus 600

Serial Number: A47525904

Photograph 1

Taken at 8:44 am CST

An employee was applying "hot topping" to the molten metal in the risers of this mold.



Photograph 2

Taken at 8:51 am CST

In Building 1989 was a pile of sand shake-out/knock-off.



Photograph 3

Taken at 9:16 am CST

One 55-gallon drum of unknown material was located outside on the property north of the foundry building.



Photograph 4

Taken at 9:16am CST

A small pile of red-colored sand was located outside of the foundry near the drum identified in Photograph 3.



Photograph 5

Taken at 9:21am CST

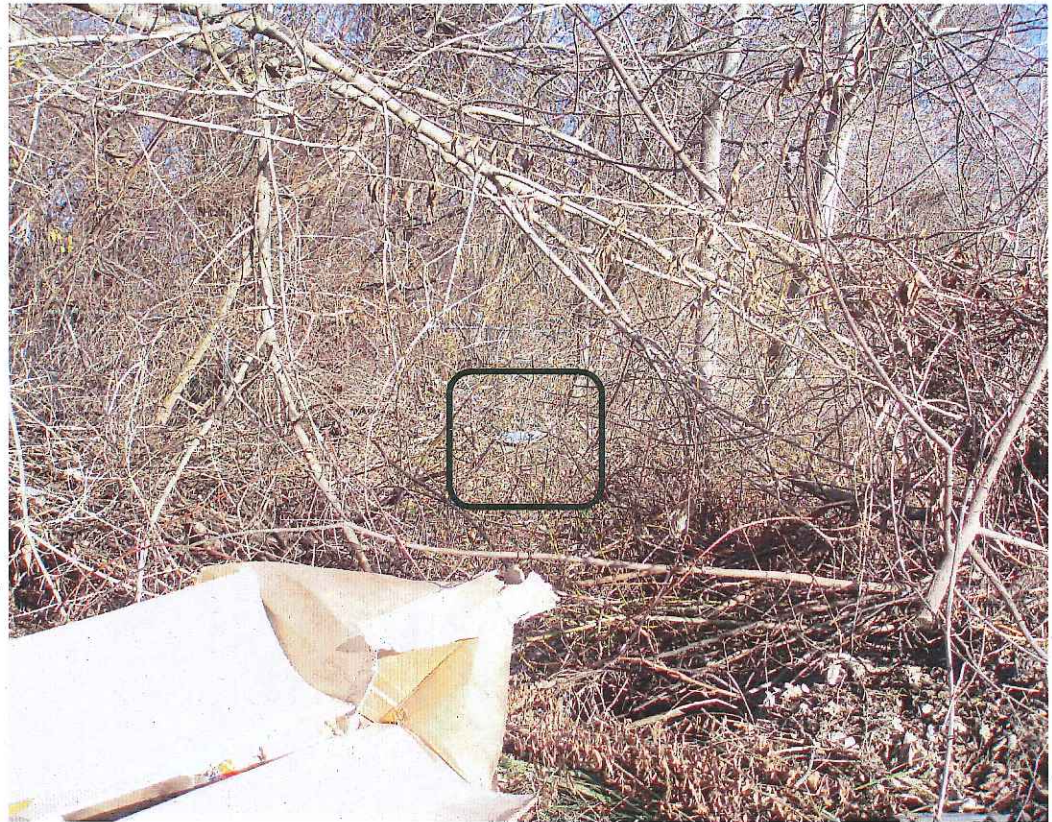
Containers were observed in the brush along the fence line along the north side of the property. (Rectangle added by B. Whitney for emphasis)



Photograph 6

Taken at 9:21 am CST

One container was observed buried beneath brush near the fence line on the north side of the property. (Rectangle added by B. Whitney for emphasis).



Photograph 7

Taken at 9:22 am CST

Containers located in front of Buildings C and D were banded together in groups of four and were palletized. Some of these containers were bulging and rusting.



Photograph 8

Taken at 9:23 am CST

Containers located in front of Buildings C and D were banded together in groups of four and were palletized. Some of these containers were bulging and were rusting. (Rectangle added by B. Whitney to emphasize bulging container).



Photograph 9

Taken at 9:23 am CST

Containers located in front of Buildings C and D were banded together in groups of four and were palletized. Some of these containers were bulging and were rusting.



Photograph 10

Taken at 9:25 am CST

Old electronic equipment were abandoned on the ground behind the containers identified in Photographs 7-9, above.



Photograph 11

Taken at 9:26 am CST

One 55-gallon poly drum located outside on the north side of the property was not labeled and contained unknown material.



Taken at 9:29 am CST

[illegible]

Photograph 13

Taken at 9:30 am CST

Additional containers were stored outside near the fence line of the property. It was unknown at the time of the inspection if these containers held waste. The totes in the foreground are empty containers of Alphaset.



Photograph 14

Taken at 9:32 am CST

Piles of shake-out/knock-off sand were accumulating outside around the property.



Photograph 15

Taken at 9:35 am CST

One 30-gallon drum outside the back door leading into the 1989 Building appeared to be filled with oil. The oil was spilling out on top of the drum.



Photograph 16

Taken at 9:35 am CST

Two 55-gallon drums were positioned on a pallet near the container identified in Photograph 15, above. The leftmost (white) drum contained unknown material.



Photograph 17

Taken at 9:49 am CST

One 55-gallon drum in the maintenance building in the eastern corner of the property was labeled as "Full." It was not known at the time of the inspection what was in this container.



Photograph 18

Taken at 9:51 am CST

Piles of shake-out/knock-off sand were accumulating outside the property.



Appendix B

Checklist

Inspection Date:

December 17, 2015

Facility Name and ID Number:

A & B Foundry and Machining

EPA ID: OHD987000015

Inspector:

Brenda Whitney

Compliance Section 2

RCRA Branch

Land and Chemicals Division

CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR REQUIREMENTS
COMPLETE AND ATTACH A PROCESS, WASTE, P2 SUMMARY SHEET

CESQG: ≤ 100 Kg. (Approximately 25-30 gallons) of waste in a calendar month or ≤ 1 Kg. of acutely hazardous waste.
 SQG: Between 100 and 1,000 Kg. (About 25 to under 300 gallons) of waste in a calendar month.
 LQG: $\geq 1,000$ Kg. (~300 gallons) of waste in a calendar month or >1 Kg. of acutely hazardous waste in a calendar month.
 NOTE: To convert from gallons to pounds: Amount in gallons x Specific Gravity x 8.345 = Amounts in pounds.

Safety Equipment Used:

WASTE EVALUATION

1.	Have all wastes generated at the facility been adequately evaluated? [3745-52-11] <u>TO BE DETERMINED</u>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
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GENERATOR CLASSIFICATION

2.	Does the generator produce ≤ 100 kg. of hazardous waste per month in accordance with 3745-51-05(A)? [conditionally exempt small quantity generator ("CESQG")] <u>ACCORDING TO FACILITY</u>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
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NOTE: If quantities of hazardous waste accumulated on-site at any one time exceed 1,000 Kg. - or the generator produces between 100 and 1,000 Kg. of hazardous waste per month, it is subject to the Small Quantity Generator ("SQG") regulations. If so, complete the Small Quantity Generator Requirements checklist. If quantities of acute hazardous waste accumulated on-site at any one time exceed 1 Kg. - or the generator produces 1,000 Kg or more of hazardous waste per month, it is subject to the Large Quantity Generator ("LQG") regulations. If so, complete the Large Quantity Generator Requirements checklist.

OFF-SITE SHIPMENT OF HAZARDOUS WASTE

3.	Does the CESQG ensure delivery of hazardous waste(s) to an off-site permitted TSD? [3734.02(F)]	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
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TREATMENT OF HAZARDOUS WASTE

4.	Does the generator treat hazardous waste in a:				
	a.	Container that meets 3745-66-70 to 3745-66-77?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
	b.	Tank that meets 3745-66-90 to 3745-66-101 except 3745-66-97(C)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
	c.	Drip pads that meet 3745-69-40 to 3745-69-45?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
	d.	Containment building that meets 3745-256-100 to 3745-256-102?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>

NOTE: Complete appropriate checklist for each unit.

NOTE: If the CESQG conducts treatment they are subject to the LQG requirements.

NOTE: If waste is treated to meet LDRs, use LDR checklist.

MIX HAZARDOUS WASTE WITH USED OIL

5.	Does the CESQG mix its hazardous waste with used oil for the purpose of burning for energy recovery? [3745-51-05(J)] If so:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	
	a.	Does the CESQG manage the mixture in accordance with 3745-279-21?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>

Facility Name/Inspection Date]

[ID Number]

CESQG Checklist October 2014 revision

Page 1 of 1

Appendix C

Documents received during the Inspection:

- Facility Layout Map
 - MSDS Alphaset 9040
-

Inspection Date:

December 17, 2015

Facility Name and ID Number:

A & B Foundry and Machining

EPA ID: OHD987000015

Inspector:

Brenda Whitney

Compliance Section 2

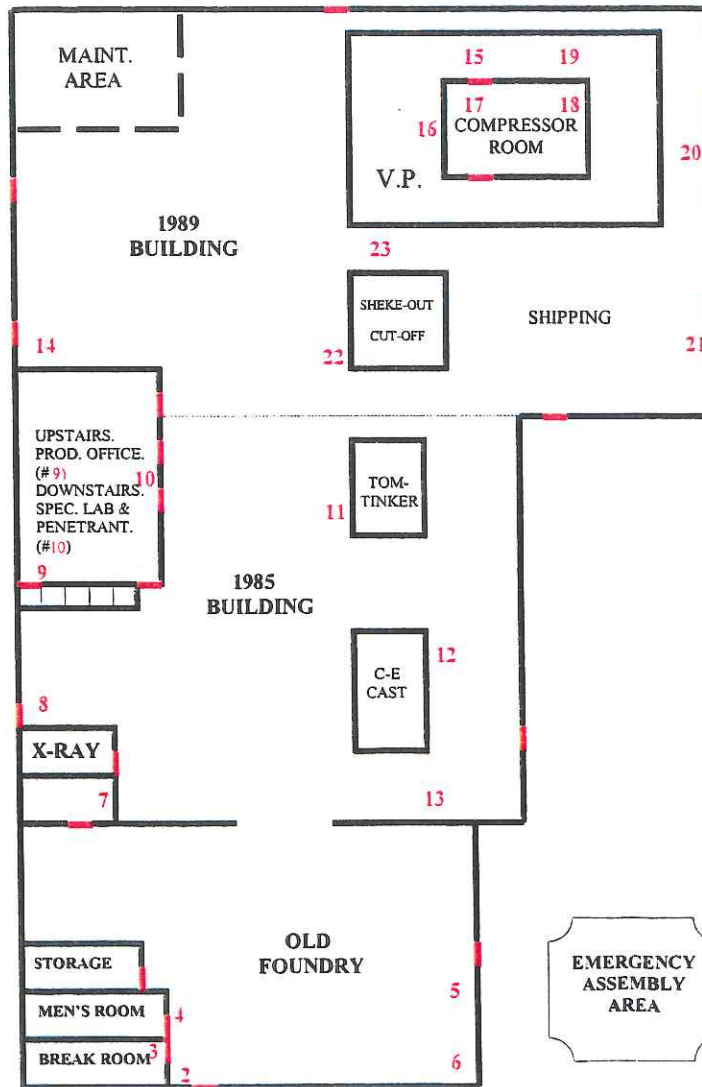
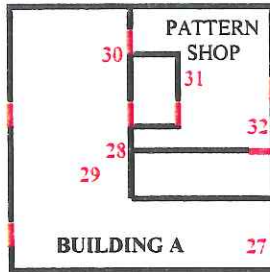
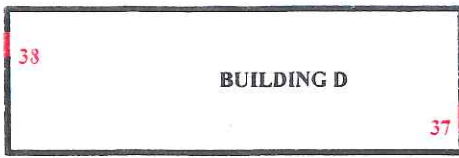
RCRA Branch

Land and Chemicals Division

A & B Foundry & Machining

FIRE EXTINGUISHER LOCATIONS

(stationary)



Monday, December 17, 2012
(T.L.H.)

G:\SAFTEY\Fire extinguishers

SAFETY DATA SHEET

1. Identification

Product identifier ALPHASET® 9040
Other means of identification
 SDS number 000000105965
 Material Number 305869
Recommended use Foundry Binder
Recommended restrictions None known.
Manufacturer/Importer/Supplier/Distributor information
Manufacturer
 Company name HA International, LLC
 Address 630 Oakmont Lane
 Westmont, IL 60559
 United States
 Telephone General Assistance (630) 575-5700
 EH&S (630) 575-5705
 Regulatory Affairs (630) 575-5722
 Customer Service (800)323-6863
 Website www.ha-international.com
 E-mail msdsquestions@ha-international.com
 Contact person Jacqueline Ramirez 630-575-5722, Jeff Krause 630-575-5705
 Emergency phone number Medical Emergency (303)-389-1396
 Toll Free (866)595-5738

2. Hazard(s) identification

Physical hazards Not classified.
Health hazards Acute toxicity, inhalation Category 4
 Skin corrosion/irritation Category 1
 Serious eye damage/eye irritation Category 1
 Sensitization, skin Category 1
 Carcinogenicity Category 1
Environmental hazards Hazardous to the aquatic environment, acute hazard Category 3
 Hazardous to the aquatic environment, long-term hazard Category 3
OSHA defined hazards Not classified.
Label elements



Signal word Danger

Hazard statement Causes severe skin burns and eye damage. May cause an allergic skin reaction. Causes serious eye damage. Harmful if inhaled. May cause cancer. Harmful to aquatic life. Harmful to aquatic life with long lasting effects.

Precautionary statement	
Prevention	This is a hazardous chemical product. It is important that all employees working with this product receive initial and periodic refresher training in its safe use and handling, both for basic risk management purposes and for compliance with the OSHA Hazard Communication Standard, 29 CFR 1910.1200. Model training materials are available upon request for many of our products. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Do not breathe mist or vapor. Wash thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. Prevent personnel exposure to dust, smoke, and fumes generated from pouring, cooling and shakeout operations through the use of effective local and general exhaust ventilation systems and/or personal protective equipment. Personnel exposure monitoring should be conducted periodically to verify these systems are operating in a manner that prevents employee exposures above applicable criteria.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Specific treatment (see this label). If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
Storage	Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	Formaldehyde may be released from this product during processing. Hazardous emissions are normally generated when cores or molds are exposed to molten metal during pouring, cooling and shakeout operations.
Supplemental information	35.5% of the mixture consists of component(s) of unknown acute inhalation toxicity. 35.49% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 35.55% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Sodium Hydroxide		1310-73-2	5 - < 10
UREA		57-13-6	1 - < 3
Formaldehyde		50-00-0	< 0.3
Other components below reportable levels			90 - 100

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause an allergic skin reaction. Dermatitis. Rash.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed. Individuals reporting respiratory irritation following use should be assessed for potential minor exposure to HF and/or chlorine and treated accordingly.
General information	IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
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Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire-fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	<p>This product is miscible in water.</p> <p>Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.</p> <p>Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.</p> <p>Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.</p>
Environmental precautions	Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist or vapor. Do not get this material in contact with eyes. Do not get this material in contact with skin. Avoid prolonged exposure. Do not get this material on clothing. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. Avoid release to the environment. Do not empty into drains. Formaldehyde and hydrocarbon vapors may be released from this product during molding operations.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Components	Type	Value
Formaldehyde (CAS 50-00-0)	STEL	2 ppm
	TWA	0.75 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Sodium Hydroxide (CAS 1310-73-2)	PEL	2 mg/m3

US. ACGIH Threshold Limit Values

Components	Type	Value
Formaldehyde (CAS 50-00-0)	Ceiling	0.3 ppm
Sodium Hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Formaldehyde (CAS 50-00-0)	Ceiling	0.1 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Sodium Hydroxide (CAS 1310-73-2)	TWA	0.016 ppm
	Ceiling	2 mg/m3

US. Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value	Form
UREA (CAS 57-13-6)	TWA	10 mg/m3	Total particulate.
Biological limit values	No biological exposure limits noted for the ingredient(s).		
Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.		
Individual protection measures, such as personal protective equipment			
Eye/face protection	Wear safety glasses with side shields (or goggles).		
Skin protection			
Hand protection	Chemical resistant gloves. Palm-dipped, nitrile-coated cotton work gloves are recommended for core room operations including core and mold handling and mold tamping operations.		
Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended. Chemical resistant gloves.		
Respiratory protection	Respiratory protection is not normally required for general core room workers when sufficient ventilation is provided to consistently maintain exposures below acceptable exposure criteria. Periodic exposure monitoring should be conducted to ensure exposures remain below relevant criteria.		
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.		
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.		

9. Physical and chemical properties
Appearance

Physical state	Liquid.
Form	Liquid.
Color	Reddish-brown
Odor	Faint odor
Odor threshold	Not available.
pH	12.6 - 13.4
Melting point/freezing point	Not Available
Initial boiling point and boiling range	Not Available
Flash point	> 212.0 °F (> 100.0 °C)
Evaporation rate	Not Available
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not Available
Explosive limit - upper (%)	Not Available
Vapor pressure	Not Available
Vapor density	Not Available
Relative density	1.2
Solubility(ies)	
Solubility (water)	Not Available

Partition coefficient (n-octanol/water)	Not Available
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Dynamic viscosity	< 80 cPs
Flammability class	Combustible III/B estimated
Thermal hazards	
Relative self-ignition temperature	Not Available

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Avoid temperatures exceeding the flash point. Reacts violently with strong acids. This product may react with oxidizing agents. Do not mix with other chemicals. Contact with incompatible materials.
Incompatible materials	Acids. Oxidizing agents.
Hazardous decomposition products	This product may release HCl or chlorine gas during use, which can cause severe eye irritation. Hazardous emissions are normally generated when cores or molds are exposed to molten metal during pouring, cooling and shakeout operations through the partial combustion and/or pyrolysis of the binder system and other components of the mold package. These emissions may potentially include but are not limited to carbon monoxide, carbon dioxide, benzene, aldehydes including formaldehyde, phenol, hydrogen cyanide, ammonia, and a wide variety of organic compounds including benzo(a) pyrene. Oxygen may be deficient in pouring, cooling and shakeout areas. Hazardous particulate matter is also normally generated in pouring, cooling and shakeout operations including, but not limited to smoke, soot, polycyclic organic compounds, particulates, nitrogen oxides and crystalline silica.

11. Toxicological information

Information on likely routes of exposure

Ingestion	Causes digestive tract burns.
Inhalation	Harmful if inhaled.
Skin contact	Causes severe skin burns. May cause an allergic skin reaction.
Eye contact	Causes serious eye damage.

Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause an allergic skin reaction. Dermatitis. Rash.
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Information on toxicological effects

Acute toxicity	Harmful if inhaled. May cause an allergic skin reaction.
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Components	Species	Test Results
Formaldehyde (CAS 50-00-0)		
Acute		
Inhalation		
LC50	Mouse	0.414 mg/l, 4 Hours
		0.4 mg/l, 2 Hours
	Rat	0.82 mg/l, 0.5 Hours
		0.48 mg/l, 4 Hours
Oral		
LD50	Guinea pig	260 mg/kg
	Mouse	42 mg/kg
	Rat	100 mg/kg
Other		
LD50	Dog	550 mg/kg
	Mouse	16 mg/kg
	Rabbit	240 mg/kg

Components	Species	Test Results
	Rat	87 mg/kg
Sodium Hydroxide (CAS 1310-73-2)		
Acute		
Other		
LD50	Mouse	40 mg/kg
UREA (CAS 57-13-6)		
Acute		
Oral		
LD50	Rat	8471 mg/kg
	Sheep	28500 mg/kg
Other		
LD50	Mouse	4600 mg/kg
	Rat	5300 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Causes severe skin burns and eye damage.

Serious eye damage/eye irritation Causes serious eye damage.

Respiratory or skin sensitization

ACGIH sensitization

Formaldehyde (CAS 50-00-0) Sensitiser.

Respiratory sensitization Not available.

Skin sensitization May cause an allergic skin reaction.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity May cause cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

Formaldehyde (CAS 50-00-0) 1 Carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens

Formaldehyde (CAS 50-00-0) Known To Be Human Carcinogen.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Formaldehyde (CAS 50-00-0) Cancer

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not available.

Chronic effects Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity Harmful to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected.

Components	Species	Test Results
Formaldehyde (CAS 50-00-0)		
Aquatic		
Crustacea	EC50	Water flea (Daphnia pulex) 4.3 - 7.8 mg/l, 48 hours
Fish	LC50	Striped bass (Morone saxatilis) 10.302 - 16.743 mg/l, 96 hours
Sodium Hydroxide (CAS 1310-73-2)		
Aquatic		
Crustacea	EC50	Water flea (Ceriodaphnia dubia) 34.59 - 47.13 mg/l, 48 hours
Fish	LC50	Western mosquitofish (Gambusia affinis) 125 mg/l, 96 hours
UREA (CAS 57-13-6)		
Aquatic		
Crustacea	EC50	Water flea (Daphnia magna) 3910 mg/l, 48 hours

Components	Species	Test Results
Fish	LC50	Giant gourami (Colisa fasciata)
		5 mg/l, 96 hours
* Estimates for product may be based on additional component data not shown.		
Persistence and degradability	No data is available on the degradability of this product.	
Bioaccumulative potential	No data available.	
Partition coefficient n-octanol / water (log Kow)		
Formaldehyde		0.35
UREA		-2.11
Mobility in soil	No data available.	
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.	

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number	UN1824
UN proper shipping name	Sodium hydroxide solution
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	Not available
Transport hazard class(es)	
Label(s)	8
RQ	Not applicable

TDG

UN number	UN1824
UN proper shipping name	SODIUM HYDROXIDE SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Special precautions for users	Read safety instructions, SDS and emergency procedures before handling.

IATA

UN number	UN1824
UN proper shipping name	Sodium hydroxide solution
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
ERG Code	8L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed.

Cargo aircraft only Allowed.

IMDG

UN number	UN1824
UN proper shipping name	SODIUM HYDROXIDE SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

DOT



IATA; IMDG; TDG



15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Formaldehyde (CAS 50-00-0)	Listed.
Sodium Hydroxide (CAS 1310-73-2)	Listed.

SARA 304 Emergency release notification

Formaldehyde (CAS 50-00-0)	100 lbs
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US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Formaldehyde (CAS 50-00-0)	Cancer
	Skin sensitization
	Respiratory sensitization
	Eye irritation
	Skin irritation
	Respiratory tract irritation
	Acute toxicity
	Flammability

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes
	Delayed Hazard - Yes
	Fire Hazard - No
	Pressure Hazard - No
	Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity	Threshold planning quantity	Threshold planning quantity, lower value	Threshold planning quantity, upper value
Phenol	108-95-2	1000	500 lbs		
Formaldehyde	50-00-0	100	500 lbs		

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Phenol	108-95-2	< 1
Formaldehyde	50-00-0	< 0.3

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Formaldehyde (CAS 50-00-0)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Formaldehyde (CAS 50-00-0)

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations**US. Massachusetts RTK - Substance List**

Formaldehyde (CAS 50-00-0)

Sodium Hydroxide (CAS 1310-73-2)

US. New Jersey Worker and Community Right-to-Know Act

Formaldehyde (CAS 50-00-0) 500 lbs

US. Pennsylvania RTK - Hazardous Substances

Formaldehyde (CAS 50-00-0)

Sodium Hydroxide (CAS 1310-73-2)

US. Rhode Island RTK

Formaldehyde (CAS 50-00-0)

Sodium Hydroxide (CAS 1310-73-2)

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Ethanol (CAS 64-17-5)

Listed: April 29, 2011

Listed: July 1, 1988

Formaldehyde (CAS 50-00-0)

Listed: January 1, 1988

US - California Proposition 65 - CRT: Listed date/Developmental toxin

Ethanol (CAS 64-17-5)

Listed: October 1, 1987

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 09-29-2015

Material name: ALPHASET® 9040

305869 Version #: 01 Issue date: 09-29-2015

SDS US

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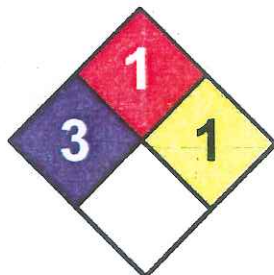
Version #

01

HMIS® ratings

Health: 3*
Flammability: 1
Physical hazard: 1

NFPA Ratings



Disclaimer

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Revision Information

Hazard(s) identification: <INDENT>Prevention
Physical & Chemical Properties: Multiple Properties

